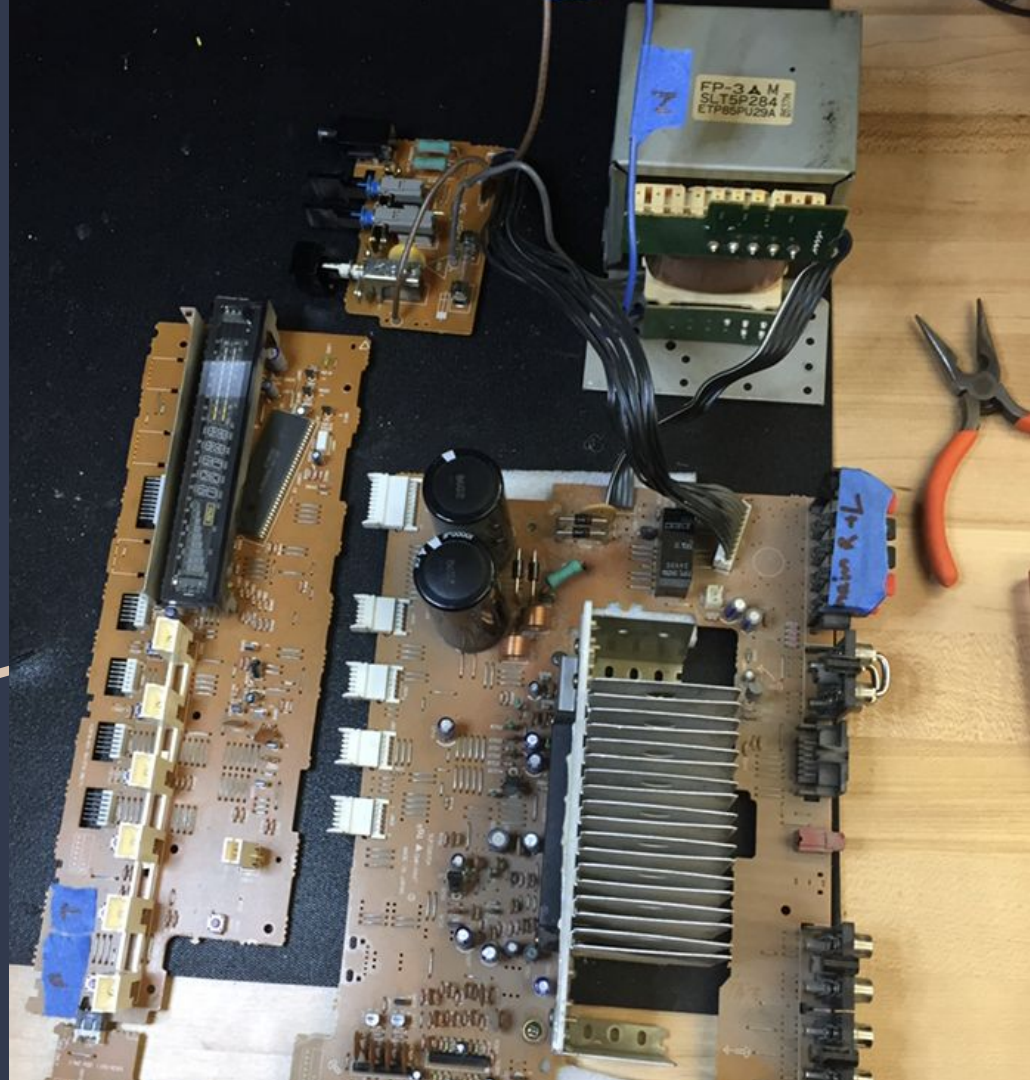


My Big, Fat Amplifier Project

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Bachelor of Musical Arts / Minor in Business

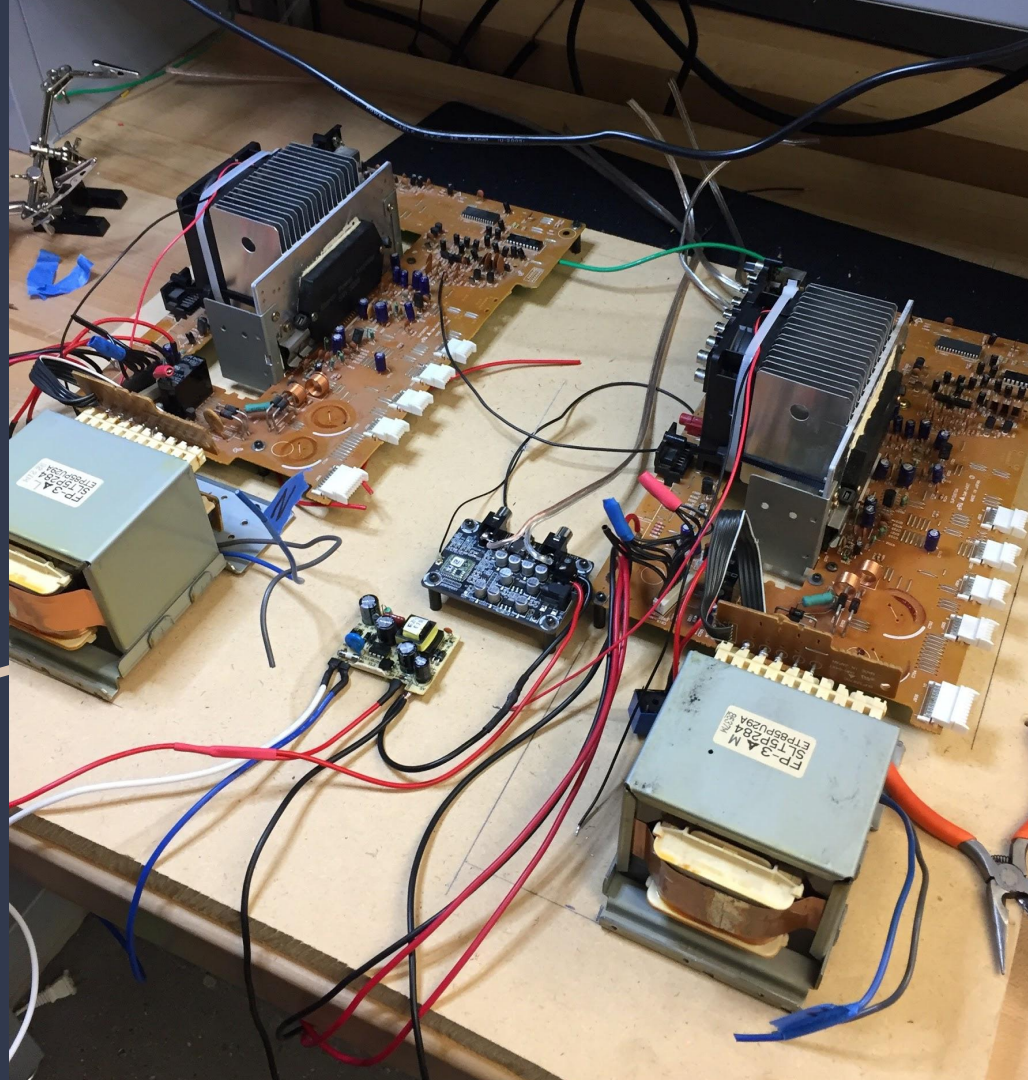
Integrating “deprecated” technology with new systems, in a very roundabout way.

How I turned 2 (and a half) old audio receivers into modern audio power amplifiers.



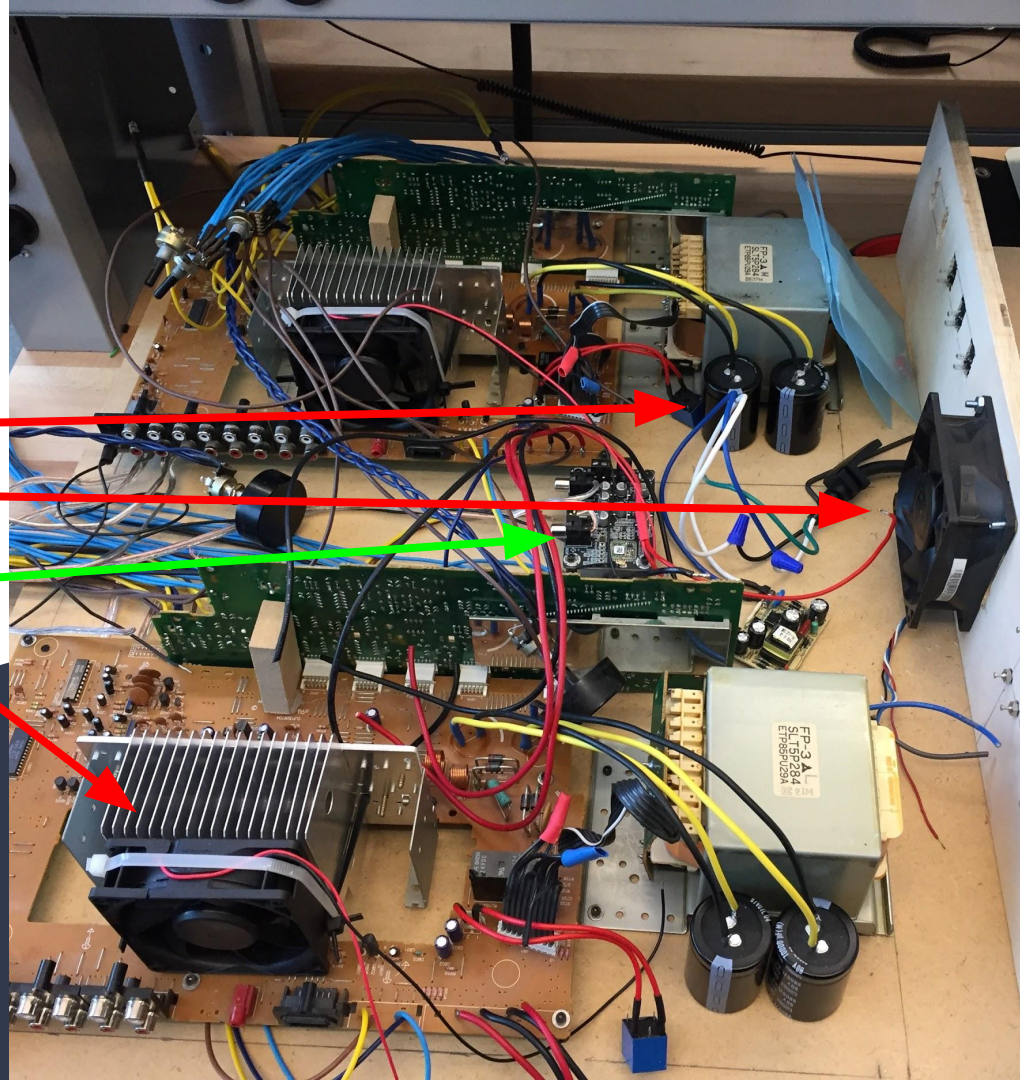
Raw Materials:

- 2x Technics SU-V98
 - 150 watts per channel into 8Ω (stereo)
 - Frequency response: 20Hz to 20kHz
 - Total harmonic distortion: 0.03%
 - Input sensitivity: 2.5mV (MM), 150mV (line)
 - Signal to noise ratio: 73dB (MM), 94dB (line)
 - Output: 150mV (line), 1V (Pre out)
 - Speaker load impedance: 8Ω to 16Ω
- ½ x Aiwa CX NAj20
 - Found in a trash heap behind Memorial Gym
 - ???



Process:

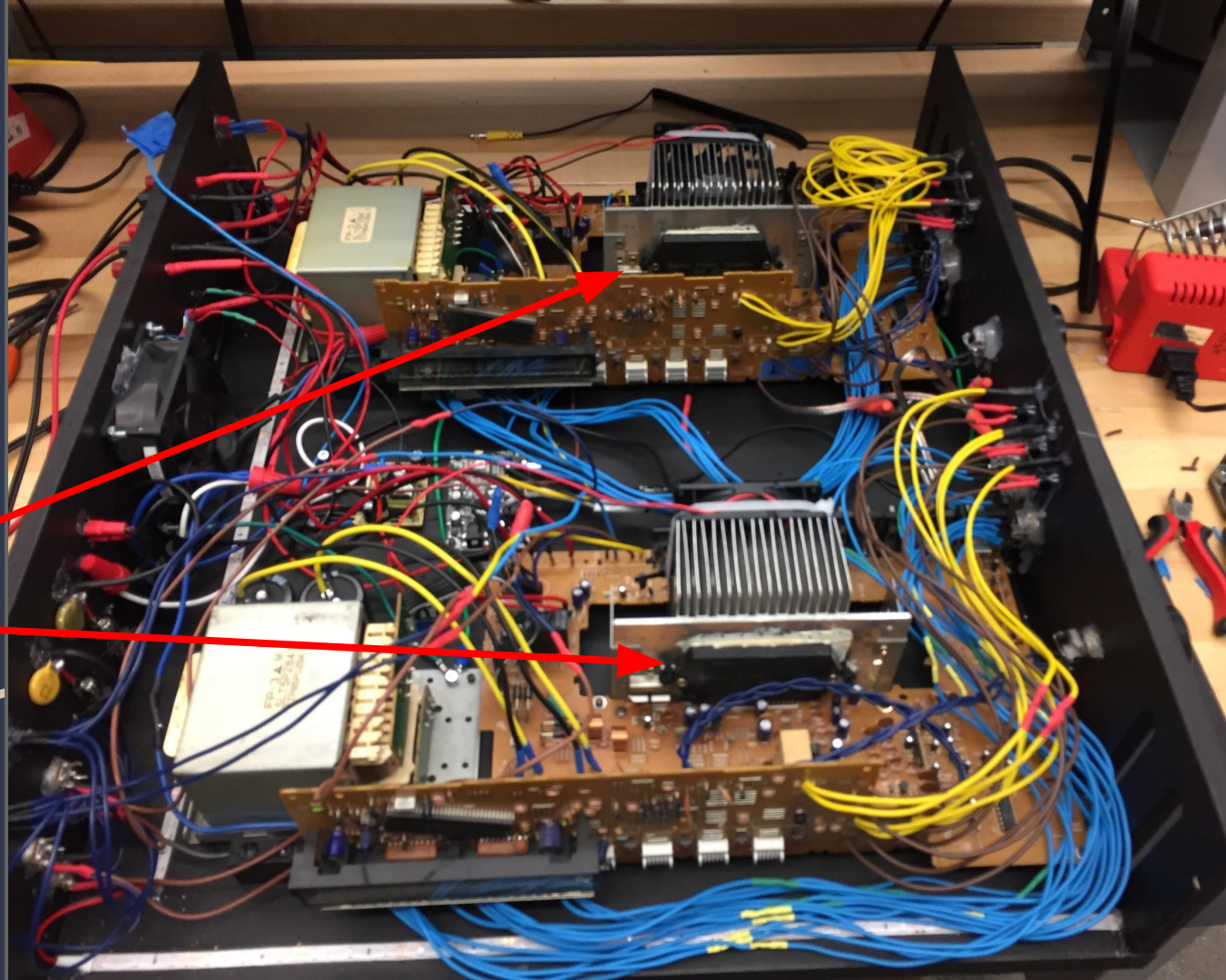
- 1) Strip both receivers of everything non-essential to performance.
- 2) Replace and upgrade old and underperforming components.
 - a) Re-Cap
 - b) Heat management
- 3) Modernize.
 - a) Bluetooth 5 Receiver
 - b) Volume Limit Circuit (not pictured)
- 1) Troubleshoot.
- 2) Finish.



Process:

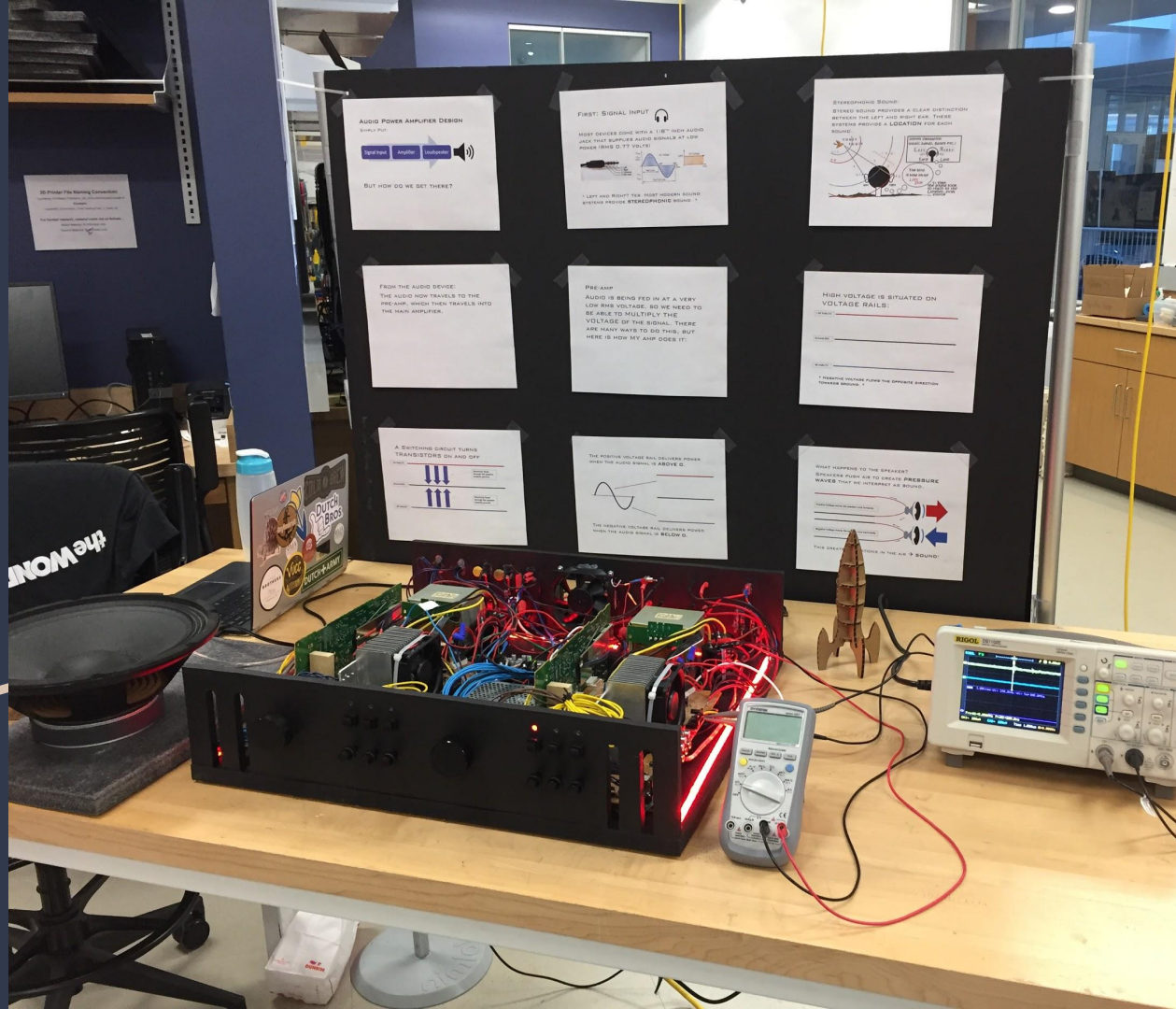
- Cable management and routing pictured here.
- Picture taken on October 1st, 2019

- There's a problem...
 - This one works
 - This does not work



A Little Secret:

- While the amplifiers were “done” for the October 4th Makerfaire, only two of the four channels worked. Luckily, I only had one speaker at the time, so nobody knew!
- However, *I wanted to fix the faulty board.*
 - I started troubleshooting.
 - Made the problem worse (Capacitor Shorting)
 - Realized the problem was *not solvable.*



Lucky Break

After leaving the project for a few months, I found an Aiwa CX NAj20 by a dumpster behind Memorial Gym.

- The ONLY thing wrong with it was a broken Volume Knob (*rotary encoder*)
 - Fixing it was as simple as replacing the component.

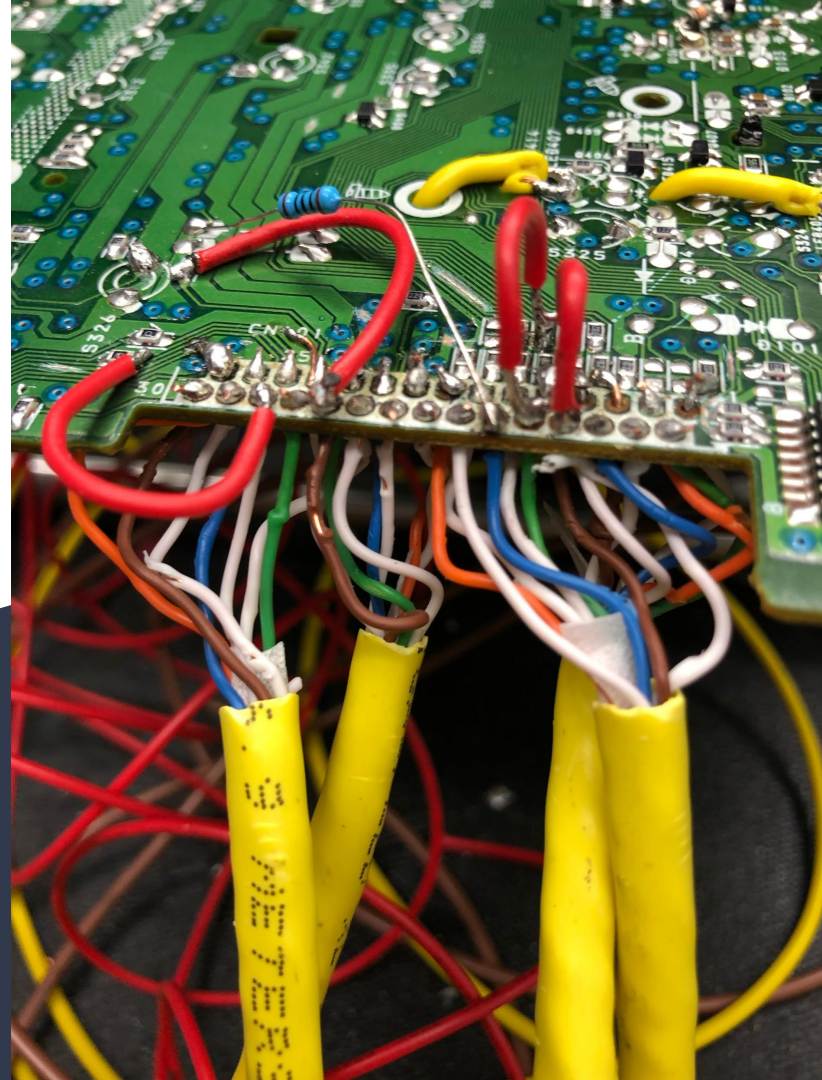
“One man’s trash is another man’s treasure”

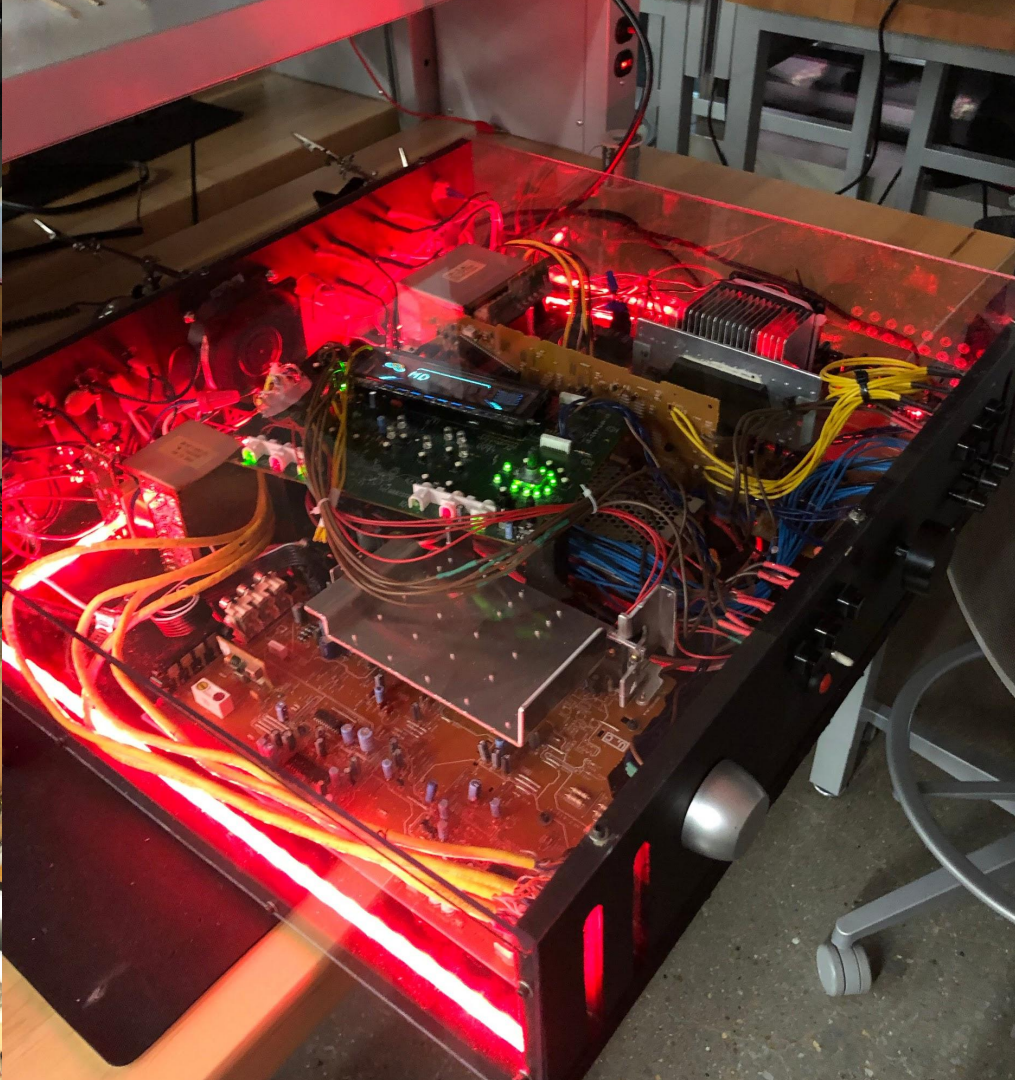
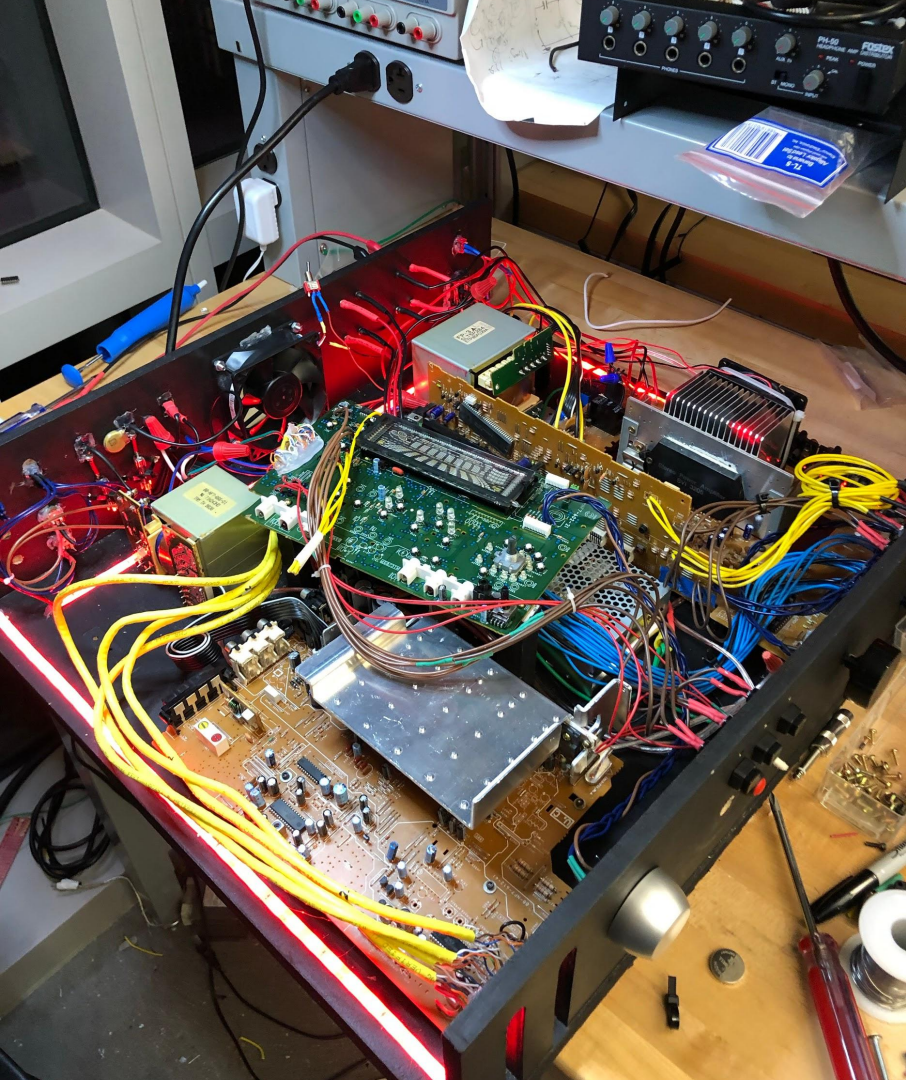


Unorthodox fitting

- I first removed all of the unnecessary features (Cassette Player, CD changer and reader, MD and Radio Tuner Board).
- The main processor board was linked to the amplifier board by a pressure-fit 30-pin connector.
- I had to fashion a cable to connect the two boards.

What you see are 4 CAT5 Ethernet cables. And yes, I destroyed some of the pads and resistors, so I did solder those on after the fact...





What I would do differently next time:

- More portable (70 lbs)





Thank You!

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